

SEQUENCE LISTING

<110> SANDIG, Volker  
WINKLER, Karsten  
MARX, Uwe  
WERMELINGER, Tobias

<120> High Yield Heterologous Expression Cell Lines for  
Expression of Gene Products with Human Glycosylation  
Pattern

<130> 04156.0012U1

<140> 10/530,224  
<141> 2005-04-04

<150> PCT/EP2003/011027  
<151> 2003-10-06

<150> EP 02022194  
<151> 2002-10-04

<160> 22

<170> PatentIn Ver. 2.1

<210> 1  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VHpromF

<400> 1  
atactagtcg gccgcaggca catccacagt cac

33

<210> 2  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VHpromR

<400> 2  
tccccggatcgatggagct ctcagggat tc

32

<210> 3  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer CAintV

<400> 3

catcgatccg ctactactac tacatgg

27

<210> 4  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer CAintR

<400> 4  
cggccacgct gtcgtat

18

<210> 5  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer  
CAMitteR

<400> 5  
agctcacctg gtgcaact

18

<210> 6  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer  
CAMitteF

<400> 6  
gacctaagct gacctagac

19

<210> 7  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer V5

<400> 7  
tccctccaaa agctgttag

18

<210> 8  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer V6

<400> 8  
atggcggtaa tgttggac

18

<210> 9  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer V7

<400> 9  
cacaagaatc cgcacagg

18

<210> 10  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer  
EBVtestR

<400> 10  
cctgatattg caggtagg

18

<210> 11  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer  
EBVtestF

<400> 11  
taccgacgaa ggaacttg

18

<210> 12  
<211> 377  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic construct

<400> 12  
cagctgggtgc agtctggggc tgaggtgaag aagcctgggg cctcagtcaa ggtctccctgc 60  
aaggcttcgt gatacacacctt caccggctcc tatatgcact gggtgcgaca ggcccctgga 120  
caaggccttg agtggatggg acggatcaat cctaacagtg gtggcacaaa ctatgcacag 180  
aaatttcagg gcagggtcac catgaccagg gacacgtcca tcagcacagc ctacatggag 240  
ctgagcaggc tgagatctga cgacacggcc gtgtattact gtgcgagaga caagcttcc 300  
cggtcagaag taccagctgg ccgctactac tactacatgg acgtctgggg caaaggacc 360  
acggtcacccg tctccctc 377

<210> 13  
<211> 18

<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer V81  
  
<400> 13  
agcttcggct caacacag

18

<210> 14  
<211> 18  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer V83  
  
<400> 14  
gccttacactg cagagatg

18

<210> 15  
<211> 22  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer V89  
  
<400> 15  
agtataccccc agaactctgc tt

22

<210> 16  
<211> 30  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer V90  
  
<400> 16  
gcccgctgcg gccggaagat gaggctgact

30

<210> 17  
<211> 25  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer V91  
  
<400> 17  
agcggccgct tgcaggacaa tatga

25

<210> 18  
<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V94

<400> 18

ttgcgtgaca ggctcagt

18

<210> 19

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V115

<400> 19

atcacacggc acttctcg

18

<210> 20

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V116

<400> 20

gagatatcgg cttctggagg acact

25

<210> 21

<211> 14000

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Proposed  
sequence of the arranged light chain locus

<400> 21

ctctccagca agggataag agaggcctgg gaggaacctg ctcagtctgg gcctaaggaa 60  
gcagcactgg tgggcctca gccatggcct ggaccgttct cctcctcggc ctccctctc 120  
actgcacagg tgatcccccc agggtctcac caacctgccc agcccaaggg ttctgggtcc 180  
agcgtgtcct tgattcttag ctcaggaggg cccttcctgt ggtggcagg atgctcatga 240  
ccctgctgca gggtgggagg ctggtggggc tgaactcccc ccaaactgtg ctcaaaggct 300  
tgtgagagcc tgagggactg cacctgcacag gagagagtag tgagtttca gttcaaagtc 360  
tccataacaac aggaaagtca tgggccactg gggctggggc tgattgcagg ggataaccctg 420  
agggttcaca gactctctgg agcttgcctg ggacagcagg gcaaggatt tcataagaag 480  
catcttcac ctgcaagcca acctctct tatattat tttattatt tattattat 540  
tttattatt tttatctttc caggctctgt gacctcttat gtgctgactc agccaccctc 600  
gggtcgtcagg gccccaggac agacggccag gattacctgt gggggaaaaca acatttggaaag 660  
taaaaagtgtg cactggtacc agcagaagcc aggccaggcc cctgtgtctgg tcgtctatga 720  
tgatagcgtc cggccctcgt ggtatccctga gcgattctct ggctccaact ctgggaacac 780  
ggccaccctg accatcagca gggtcgaagc cggggatgag gccgactatt actgtcaggt 840  
gtgggatagt agtagtgate atcccacggt gacacaggca gatgaggaag tgagacaaaa 900  
acaccctccc agcctcggtc accctcttgc tccagccccg ggaaggctgt tgataaagcc 960  
atgagtgaat ctggccctgt tcacactggat ctgagccctt cagggttgcctt ttccctccag 1020

ccccctccag gagtctctac agaagataca tcagggataa atatggcctg gaagggccag 1080  
aatcatctgg tgacttgggg ctgttgtgt agtagagaa tgaaggcttg ggtggaaaga 1140  
cagacagagg caacctctgt ccactgtcct acccctggat ggtcatatgg tggggacagg 1200  
gcaagtccct agaccaactg tctggatcg gccccagaac tactgcccag ttctgctgag 1260  
gtcctggccc ccaggctgtg tggcagcctg tgattcccaa cagagcaaac cagaggaatg 1320  
gacactgtga agtctgccc gatccccctcc tcaatgtgac ccacctggca ctgctgagaa 1380  
gcccagcagc tcagagctgt gcccctactg ggaagtgtctg ttgggtgcag aaagcttcct 1440  
caagtttgtg tccctttca gagggggtcg gttaatcaa ccaagatctc aaatccttgc 1500  
ctcaatttaa gatgccactg aatgaagggc ctcccagctc cagagctccc tgtgtggata 1560  
cctgaggcct caatgtcaac tccatcacga gtcagggctc ccttcgtccc cgtgttgccc 1620  
cccccaactcc cttctgaatc ttctgtgcat ggacatctc attgcagagt tagcttccag 1680  
agaaccccat ctaagatggc cagctgtccc caacatgggt catcaggac ctgagtaggc 1740  
caactataaac taaaaactct gtttctgtc caaatttgca gagtaaatgt tgaaaatgccc 1800  
aatctgtatgg ttccttgaat ttttatggaa tgaaaaggga gcctgacatg ccaggtgctc 1860  
tgggttgagg gattttggg gtcagatctc cctgcaggaa agcccccggc agggggagca 1920  
gcctcaccac tcacaggaac cacagataca cccacaagggt gagctgcagg atggatgctg 1980  
cccacctcca ccctccacat cctctgtaaa tggctgtcct ttctacaact ccaaccagat 2040  
atgttagatgt ggcgaactac gtaaaaatacg gatcattcat cacataaaa cccactgcag 2100  
gacaccctgg tcaacaaaga acccaatcac atccccatca actacatagt ttccaaattt 2160  
tccatctcca gaaaaataac aataacaata tacatgaaaa tcgatgtaat ttatctcata 2220  
cataatttca tggataaac gtggaaatga tagtattttg ctctactgaa ataaataaaaa 2280  
tatatatata tatctgaatt tatttgtctt atctttcat attaatgtg gtgactagac 2340  
actaggggt cacaggagga tcgtgtcata ccaactatggg acagagctcc tcacaactct 2400  
ttcaggtgac aggtactgtt gagtaacctg ctgcaagcat ccccatctcc accagaccat 2460  
ataagtgtga acccaggaag aggactgga acaatagaga gaaaaacctg cttgtgcaga 2520  
agacgggtcc cttgagccct gtcctgtc catcctacgg gtgcacatt catctcatgg 2580  
tgtaatattt cgtgccctgc ctgagcttat gaccgagggg atatggcagg tctgactgtg 2640  
tggttactgg tgcacatgt ggttctggat gtaacaaagc cctcgaatat agaagagggt 2700  
gtttcaaaa ggaataatt atctactgca catgacatag acttggctc aaatccatg 2760  
cgtctacact aggattctcc tctgaagct tgccttaagc acaaggttc agttcctatg 2820  
tccagttccct ctattatggt agagtctgtc agtttctctg gcccaatagc aggacactca 2880  
ctccccccacc tgacacccctgc gcagagcett tctactcttgc gccccaaaac actgggtgac 2940  
acagttctca gaccatgtat ttatagtgatc agtattcagg cctcaggggt ccctgtatggc 3000  
ttctctggct ccaagttctgg aaacacagcc tccatgacca tctctgggtt ccaggctgag 3060  
gatgaggctg attattactg caactcacat aggagaggtg gcactttcca ccgtggatcca 3120  
agttcatggg gaattgagac ccaaaccctgc cctggctct cagcctcttcttggatctg 3180  
agatgcttcc tcacccctgtg caagggctt cttgcagcac tgccttgaga atttccctc 3240  
tcccagctcc tctccttctt caccaggaag tccaaaagga aacctgtct gtgatttctc 3300  
atccaggaca gtgacagctt cctgatgtt gtgtgtctgt gtcctgaat gtgcaactct 3360  
tcctagctct tcaaatgcag gcacatagtg agaaaagctg cctgactgtt gcattcaactg 3420  
ctgtttttaa ggatgtctc accaaaaatg catcctctc ccaaattgtg aagaacaatc 3480  
tggacagagg tcattacagg gagtttcaag aaactgcattt ttattcaatt gtgtccacca 3540  
tggctggta aagatggccc tcctggatgg actattctc tgcattgtctg tcctgaagca 3600  
gtgaccactg tgagaagatc tgaacatgtt tggaggtat taaggacgag aggaaactgt 3660  
tgtttttattt attctttgt ttttggggaaatctt tttgctttgt cgccaggctg 3720  
gagtgcagtg gcagaatctt ggcttactga aatctcagcc tcccaggctc taccaatgtc 3780  
ccctgcctca gcctcccgaa gagctggat aacaggtgac caccacccatg cctggctgt 3840  
ttttgtatata ttagtagaga cgggatttca ccatgttggc caggctggc ttgaactct 3900  
gatctcaggat gatgcacccca cctcggctc tcaaaggat gggataacac acaggagcca 3960  
ctgcattctgg cagtttttt ttttattttt ctccctctt ttgcctcaat acctcagggtt 4020  
gctgagctgg ggagattttt cgtgacaggg tcagtgtctc ctcaaaatcc tcccgtctca 4080  
atcgctggg gcccgttccct ggaaactccc caaaaggatgg tgggtccct atagggttggg 4140  
agtttccaaa atggcccccac agggaaagagt taacgtgagt ccattcttc ttccctcattg 4200  
acatccagca ttgtatattt ccatgggtgt caatactttt gttagctgaaa tctttcttaa 4260  
tctactaaag gtgagaatga attaataaa tattcagaca tttagttgcatt ccaatattt 4320  
aattttatga gtcaatttgtt agacatagcc attattatata attatttagg cttcataaaac 4380  
tttgattaaa tagttttat taaaaacaaa gtaaccattt tattatgtt ttagactata 4440  
tcaacatgtt gtgtacctga aatatccaca agaaaatata tttcaaaaac caaattgtat 4500  
ttattgtcta ttgttgcata aaaattgtctc cctaatattt agcatggtaa gagaacacgt 4560  
gtttgtgatc ttgtcacttc ggtgcattc gaaatggagag cagcttagtt ttgtgggttct 4620  
ggttctgggt tggcatgaa gttgcagccca agctgtcagg ccaggctgca ttccagggcc 4680

agagcagggtg gccaggccc gcctgagggg cttccactgt ccctaaccgt tttgtctgat 4740  
 gtggaaaatc tcagaggaaa aggagagagt gaagtgtaa gacccgtcc cagtcggcc 4800  
 tgtcaaaaggc catccccatac ctgcaccatt tcttattctt tcctgggctg tcataaggcat 4860  
 agagcaactgc ccattcattc taacgctgtc gagtattctg tagtaggatt tttagccatgc 4920  
 agcctctaatt gtttatcacc atgattttga tcttacaaat cacactgcag caagcatccc 4980  
 tgtcagact ctttgagtt catgtgtcata tatcaccata ggataaattt ccagaagtgg 5040  
 aattgtctgg tcaaaaggat gtgcattttt aacttttac catttttc atattccct 5100  
 ccagttctac cagttacaa taccagccct aaatattgtat tggaattcat ttgtgaaaagt 5160  
 gcaagttgt gccaacctat cagatataca aagttatctt gttacacatt tattttgtat 5220  
 ttctccattt ttgcttgagg ttgagcattt actcaaataat ttcagtgctc attatgttt 5280  
 aggatttggtaa aaccgtttc ttcaatgcct cgtaagagg tatttttagtc ttgcctatgc 5340  
 acaagacaac gttggataa tatgtatgtt ctgatacacc atctacaacg taatcattaa 5400  
 aacatataaa aaccactatac agttctgggg ccattaaaaa aattgtggc aggccaggg 5460  
 tgtcccacag gatgtggttt aacggctctt gtttcttagg gttatttgaa gtttgaacat 5520  
 tgcacccgca tatgttctat gtggagatct ctttgtgagg gacactgtaa ttccacccct 5580  
 ctaggggcct gaggtcttcc tttggataaag aacctacctg taccatgtgt ttgattggat 5640  
 cttgtgtctg ctcaagacag ccctgtgtca caagctcatg actttcatct tcatccattt 5700  
 gctctgtttt gtgagagctt cagtatatac ggaatagaga ttccctcgag gtgaaaaatt 5760  
 agaggcagag ggagggccaa atgggcaagg aagcttgcac caagtcggg gtgatccagt 5820  
 gttaggctgag agaaaaaagg tcttaaaatc agcctttagt ctgaaaaccaa aacacaccaa 5880  
 gatgggttgtt gttctgagca tcattaacaa atgataaatg aagttgaact tttaaatgta 5940  
 ttgcaaaattt ttataaagca agtagatctt taaactcaga atgcaacaat ggaataaaaga 6000  
 agagagttt agatgtttt aaaattttt tattttttt tttatttttt agatggagtc 6060  
 tcactctgtt gccaggctgg agtgcagtgg cacaatcgcg gctcaactgca acatccacct 6120  
 cccgggttca agaaattctc ctgcctcaagc ctcccaagta gctgggatta caagctctcg 6180  
 ccatcatgccc aggctaattt ttgtattttt ttagtagagaca tggtttcaca atgttgacca 6240  
 ggatgggtgtc aatctcctga cctcatgatc caccctgtc ggcctccaa agtgcggg 6300  
 ttacaggcat gaactaccgt gcctggctga gttttagatt ttaactgtaa gtcctccaac 6360  
 taagttgcca tgacaagaac agggatgatg agagtggaaa tatgttatcc tgcaaattat 6420  
 cgtttatgt aaaagaatat ttccctctt ttaggtaaag gaagcatctt ctggagcacc 6480  
 ttctctctga ctatcaaagc accattaagc cacaataaa ctgtaacatg aagtaggaaa 6540  
 caactgcctt tttatataac cattgagagg tggctttata tgcataacaa aatgttgatg 6600  
 ctcaatgcta aaattggatt tagtaattta atatgcctac aagaaattaa tttctttgg 6660  
 attatattat ttctgtgtac gatttatctt agttaacttg gaaatattct gctctaaaaa 6720  
 caactcttgt ttttgggtt atattttctg tatcaactat agctctttc caaatgctgt 6780  
 cagagatagc ccatggctac tgatcacaaa attcaatttt atggcattta aattattcta 6840  
 tactctaaat tattttaaaaa gtgcacagat gtgaattttt cacatctgac tcaaaaaatgt 6900  
 tgctgatgtt gactcacttt ttatttcaa tcttattgaa gttaggatgtt actttctgg 6960  
 aacctggatg ataacaggag actggagagg aaacccccc aattgtttt ctttaaaccc 7020  
 tcaggatgaa tcattctgga taatcacca cacttgattt gggtgatatic taaatgagag 7080  
 ttgggtctta gagtaggtgc tgagtttagt taggacttgc gctgtggaa tgagttgaat 7140  
 gtttttacaa gtgagaaaga catgagttt ttggagtcca gagggtgggg gtttattggc 7200  
 tgaattaagt cccccaaaat gtatgcattt aagctgtaa acacaatatg tgactgaaat 7260  
 tgtgcattttt gtctttaaag aggtgactaa gtgaaaatga aaaaattagg gtggattctt 7320  
 ctcaaattgg actgatgtcc tccttaggaag aagaaattt cacacacaga aatgaggcac 7380  
 cagaggtgag cgtcagaga aaagaccagg tgaggattca gcaaggaggt agcaacctgc 7440  
 aagccaagga gaggtcctc aggggaaacc aaacccacta ccacccctt cttgggtttt 7500  
 ccagcttcag aactgtgaga aaatatgttt ctgccatttc ggtcactaat tcttcctat 7560  
 cttcttggtagc gagctcttagc aaaaacaaga gggaccccaa agacccggta tgagggagaa 7620  
 ggaggagatg gacccggcgg tgcaggaagg ggctggaaagg tcgggctctg 7680  
 aggtgcattt cctgggtgga atcttgactc cactccctat tgcattggagg acttggggaa 7740  
 aacatttaac ctccataat tcaactcaata ataaagatgg gcttgaagca caaggctccc 7800  
 catcatccta ttctatatta caaaagtctt ctggagttaa cacttgataa actctcgcta 7860  
 atgcattctgg catgtattat ggactcataa gtagcccttc tgagtatct agtgcattgtc 7920  
 agaaaaatggc attcatgctg tgcaccat gggcactgt gaggttagt ctgaggcccc 7980  
 taatgatgtt aagcccttag taatgctaa gggcgaagag cctgactgtt gcttcctatg 8040  
 aggccccttc tagtgggtaa atctgaaaat gcaacttggcc ctcttctga tcttgagaaa 8100  
 ttactcagag aaggccatca ggctcaggcc tcagacaaacc accaggacaa atgttttagg 8160  
 gaatggagaa cagatttgca tccactgtc accagagcca cctaacgacg acacaagaat 8220  
 aaaggaagta gatttgcatg aagagactt ccttcctatg ataagagagg cctggaggtt 8280  
 cttccatttc tgcggctca gaagcagact tctgggtgt ctccaccatg gcctggaccc 8340

ctctctggct cactctccctc actctttgca taggtgctgc ctcccagggc tcaaccccat 8400  
 attatcatgc tagctgtgcc aacctggccc tgagcttcgg ctcaacacag ggagtagtgt 8460  
 agggtgtggg actctaggcg tttttctga gctgactcag gaccctgtg tgcgtgtggc cttgggacag 8520  
 acagtccggta tcacatgcca aggagacagc ctcagaagct attatgcaga ctggtaccag 8640  
 cagaagccag ggcaggcccc tatacttgta atctatgata aaaacaaccg gccctcaggg 8700  
 atcccagacc gatttttgg ctccagctca gaaaaacacag cttccttgac catcaactggg 8760  
 gctcaggcgg aagatgagge tgactattac tgtaactccc gggacagcag tggtcaccgt 8820  
 gtggtttccg gcggaggac caagctgacc gccttaggtg agtctttct cccctctcct 8880  
 tccccgctct tgggacaatt tctgtgttt ttgtttgtt ctgtatctt ttcacttg 8940  
 tggtcagcc ttctccctgc atcccaggcc tgagcaagga cctctgcctt ccctgttcag 9000  
 acccttgctt gcctcagcag gtcactacaa ccacttcacc tctgaccaca gggcagggg 9060  
 actagataga atgacactact gagcctcgta tgcgtgtctg tctgtgtgc tctctgttt 9120  
 tctctctgtc tctctgttt tctctctgac tgctgtacag ggcaggctg ggtctctaag 9180  
 ccttgttctg ttctggcctc ctcagtcgg gttctgtcg gaacagctt gtccttggt 9240  
 tacctgggtt ccatctcctg gggaaattggg aacaagggtt ctgaggggagg cacctcctgg 9300  
 gagactttag aaggaccac ggcctcggt gctgtatgctc gggaaatcaca gagctgggac 9360  
 ccagagccag gatccagacc cagaatgagg taggaggtgg aggggtgccc ctgggggtct 9420  
 gggggctgcc agggactgag ccctgagcca gcctgagact cagggaaaccc cgtcaggagg 9480  
 gagaagggag aagcagactc tggacaccag aaagccaggg gaagggtcac aaaaggagt 9540  
 gatgtacggg aaggccggc tcctgggtct ctccagaaca tatcccctgt gcccagggg 9600  
 atcagagggg cagagtccac tgcgtgaaag cccactgct atgaccaggt agccgggacg 9660  
 tggggtgat gccagaaaag actccacgga ataagagaga gcccaggaca gcaggcaggc 9720  
 tctccgatcc ccccaggccc ttgccccata cacgggctcc agaacacaca ttgggtctgga 9780  
 acagcctgag ggacaaaag gccccagat cccacagagc tgaggagcca ggccagaaaa 9840  
 gtaacccag agttcgctgt gcagggaga cacagagctc tctttatctg tcaggatggc 9900  
 aggaggggac agggtcaggg cgctgaggtt cagatgtcg gttgggggc caaggcccc 9960  
 agagatctca ggacaggtgg tcaggtgtct aaggtaaaac agtccccgt gcagatcagg 10020  
 gcatagtggaa aaacaccctg acccctctgc ctggcataga ctttcagaca cagagccct 10080  
 gaacaagggc accccaacac ctcatcatat actgaggtca gggctcccc aggtggacac 10140  
 caggactctg accccctgccc ctcatccac ccccgaggc agcccaaggc tgccccctcg 10200  
 gtcactctgt tccccccctc ctctgaggag ctcaagccca acaaggccac actgggtgt 10260  
 ctcataagtg acttctaccc gggagccgt acagtggcct ggaaggcaga tagcagcccc 10320  
 gtcaaggcgg gagtgagac caccacaccc tccaaacaaa gcaacaacaa gtacgcggcc 10380  
 agcagctatc tgacactgac gcctgagcag tggaaatccc acagaagcta cagctgccc 10440  
 gtcacgcatt aaggagcac cgtggagaag acagtggccc ctacagaatg ttcatacggtt 10500  
 ctcaacccctc acccccccacc acgggagact agagctgcag gatcccaggg gaggggtctc 10560  
 tcctccacc ccaaggcatc aagccctct cctgcactc aataaaccct caataaatat 10620  
 tctcattgtc aatcagaaaat ctgttttat ctcatttttt cttttctcac atataattcc 10680  
 tagccttcc tgggtctca atttgtgggt gaaagaaccc tgaaccagt gggaaagttg 10740  
 cctatgtgaa ggggtctca gttccctggg catctctgca ggttaaggcct tcctcacc 10800  
 gacaccctt cctcagctt ccactgtacc cctgagccac cagcctcgcc tggctgggac 10860  
 caggggggtg tcacactctc cttagattctg ctttcaaca gaaacctaac cacgcac 10920  
 acggcacttc tgcacatgcct tctgtgtctg ctccagtc tggctaaag agttgtgt 10980  
 ccgggacagg ggataggcgc gctttggc agatgccagg tccctgccc gcatccctg 11040  
 accctatgca acaagccatg gactctggg agtctctgt gtcaggagaa tccatgatcc 11100  
 agagttcat attgtccctgc aagcatctgg tgggtgttag ctcttgccaa actggaaat 11160  
 accatggccc agcatcagga tgcaggacag tccggagagg gaaatcagga gaagtgaagg 11220  
 ggtctctggg gagccagat gtggctaga ggcagaagta agggtgaaga gcacccat 11280  
 gtcaatgtca tggctctcgc aggaacacag ttgaaaatcc ccattccaca caagaccgtt 11340  
 tagcaggaaa ggagtcata cttgtgtc caccaggatg tcctgagaag cttggagaa 11400  
 tggaaacatac aggtgcattt cctagacttg acaatgcacg tttagccaatg aaggcaatg 11460  
 aaaagttctc tactaggaa ataatttctt gtggtaaagc tttagcttatg taaagtccaca 11520  
 ttatccatc tggcacctt cccatccca taatattctg caagatacta gtatgtcatg 11580  
 gaagtagttt atgaaacata aagttagatt taagaacaaa gatgttacgg gtgtatgata 11640  
 agatggctac aggctcaggc tcaggctcgaa ggagtgaagg aggccgtgc aattcatga 11700  
 caagagttgg agctggccca ggctgggtca gggctgtgtg aatgcagaca gagggctaca 11760  
 ggcaaggtca ggcacccatg aacactcagc tcccccagac cttcctgccc actgggac 11820  
 tcgcctccctt tgggtcacag tgggtggagcc ttcttacccaa aaccttctatg gaggccctgg 11880  
 atgactgtgc gtttttagt cccacgcaaa cttagactcc ctgtctctgc ctccac 11940  
 tcaggaatgt ggcagctgag ttcaccagag ctgtctgggtg gtcggcagcag gccagggaca 12000

gagcccgcaa agacaggaag ctctgcagtc acaatgaggc agagaaaatgg ccccttggtg 12060  
 cttgatcaca gccacccctg atccaaatcc cagcctctga attagaagaa ggctaaaagg 12120  
 ttctagtggc cacagtccct gtctaagccc atttcacaaa tgagaaaaact aagaccaccc 12180  
 aaggagggcc agttacgtag gcctgctggg tacaaggcca aggtctactt cacacccagc 12240  
 agctgtccaa agactgagct gtgtcataag tttatattat gaagaactct gaacatataa 12300  
 ataaggagac agaaaaataa cagtgtccca tggctctcatc acccagcact caaaataa 12360  
 aattcacaga tgatgccac ccacccacag caaaataaat tctcccttac acaacattta 12420  
 gaaagaaaata caagacatca gatctgttca gctgtaagta ctccattact gtcctggaa 12480  
 gacatggacc taaaataac tataatatca ctaccaaacc taaatagaaa ttatcactaa 12540  
 ttccctaata tcgagaaata agcagggctc cctcaaattgc atcagaaaaca ccagaagtgc 12600  
 tttggcttag ttacatgttgc tgctgttgg tattttgggg tttaaattttta tatgaggagc 12660  
 aatatgacat caaatggta tgggtgcatt tgccatcagg ctggtgttca ctgggtgaata 12720  
 ttccctcaat tgctctagag cctcccgca aggcaggagc tgcaggagct gagagctgtc 12780  
 tggagaacct cccctggctg ctatacagcc acgectctg gaggcaggaa ctagggttc 12840  
 cctcagctt tattttcctg gaaaatgatt ctacatgaa ggggatttaac ttgattcaga 12900  
 ttggacattt gaaaatagct tgcaaggaca gggagctgct accagcagag tcacccatgt 12960  
 cagactgcca ctctttagt aatgttagtgc gcataggatg gtcaatagct acatccctca 13020  
 gaagggaaagg aaggcagagg gttgaggctt cagttcacct ctttcatttgc aatgtgtcag 13080  
 agtgtctgtg atgtcagagg tctgcagctg ggctctgttcc acccaggagt gtgcttcatt 13140  
 ctcttaggaag gagccacttt gcacacagaa gatccggggc ccagccatcc ttccagggtg 13200  
 aacaattcat gtcttcttc atggtaact ctaggattca agccatctaa tgcttttgc 13260  
 gccactgtca ttatatttaa ttgatgttgc cagttggccca ccaatgtatgaa atattttccc 13320  
 agggggagtc tccccaaatgt gcttcagact tcctcacatg gccccagggg attaaatggc 13380  
 tcctgattac tcagaggata agagggtctg tcttatcatg ttcccttctt atttgtctta 13440  
 tgtgtcttc ctggcccagg cctggatcc cccactgtatc tccctccct tagtgagg 13500  
 tgatattttgg agaccacatt ctggaggctc ccttcatttgc cccatggaa aaagacaacg 13560  
 gcagcctcca ccctagctgt cccacccaaat atgaggccag attcagggggt gcagggtatgc 13620  
 tccccaaatgtt acccttaacag atgtgactgg cacttcattat tgggaccagc caggcctcac 13680  
 tgaccaggcc tatccaacta gaactactcc agaagggtgg gctgaaaccc accaagggttc 13740  
 ccagaacact gcactctagg gcaatcagcc tctgcattggg aggagaggag caccctctgc 13800  
 accacccat ggttttacca aaagtttgcac catgggttgg ttcaacttttgc cagagaagag 13860  
 accacctatc ccatctgtgg aaatttactc cttagcaca ctaatgcct ctaataaatt 13920  
 caatcctggg cctgagtgtat ggttgggtca aaaaacaaat tcaagatccc aatgtcctcc 13980  
 agaaggcttggg attttccagg 14000

<210> 22  
 <211> 13685  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Vector pVLCL

<400> 22  
 ctagcctgc aggtttatcg gcttctggag gacactggga tcttgaattt gttttttgc 60  
 ccaaccatca ctcaggccca ggattgaatt tattagaggg cattagtgtc gctaaggagt 120  
 gaattttccac agatgggata ggtggctct tctctgcacaa gttgaaccaa cccatggttc 180  
 aacttttggt aacaccatgg ggtgggtgcag agggtgctcc tctccctccca tgcagaggct 240  
 gattggcccta gagtcagtg ttctgggaac ttgggtgggt ttcagcccca cttctggag 300  
 tagttcttagt tggataggcc tggtcagta ggcctggctg gtcrrrrrataat gaagtgc 360  
 tcacatctgt tagggtaacc ttggggagcat ccctgcaccc ctgaatctgg cttcatgttgc 420  
 ggtggggacag cttagggtggaa ggctggccgtt gtcttttca aatgggggac atgaggggagc 480  
 ctccagaatg tggctctccaa atatcaccc tcactaaggaa aaggagatc aatgggggat 540  
 cccaggcctg gggcaggaaa gacacataag acaaataaga aaggaacatg ataagacaga 600  
 acctcttatac ctctgagtaa tcaggagcca ttatatcccc tggggccatg tgaggaaatgc 660  
 tgaaggccact tggggagact cccctggga aaatattcat cattgggtggc cacctgtcat 720  
 catcaattaa atataatgac agtggcttca aaagcattag atggcttgc ttcttagagg 780  
 caccatgaga gaagacatga attgttccacc ctggaaaggat ggctggggccc cggatcttct 840  
 gtgtgcaaaag tggctcccttc cttagagcatg aagcacactc ctgggtgaac agagcccagc 900  
 tgcagaccc tcacatcaca gacactctgc agcactcatg agaaggaggt gaactgaagc 960

ctcacccctc tgccttcctt cccttctgag ggatgttagct attgaccatc ctatgcagct 1020  
 aacattacta caagagtggc agtctgacat gggtagctct gctggtagca gctccctgtc 1080  
 cttgcaagct atttgcaat gtccaatctg aatcaaggta atccccctca tgctagaatc 1140  
 atttccagg aaaataaaag ctgagggaaag cccttaggttc ctgctccagg aggcgtggct 1200  
 gtatagcagc cagggaaatg tctccagaca gctctcagct cctgcagctc ctgccttgcc 1260  
 gggaggctct agagcaattg aggaaatatt caccagtac aaccagctg atggcacatg 1320  
 cacccatcac catttgatgt catattgctc ctcataaaaa cttaaaccctt caaataccaa 1380  
 cagcaccaac atgtaactaa gccaaagcac ttctgggtt tctgatgcat ttgaggagac 1440  
 cctgcttatt tctcgatatt agggaaattt tgataatttc tatttaggtt ttgtagtgtat 1500  
 attatagttt ttttaaggta catgtcattc caggacagta atggagact tacagctgaa 1560  
 cagatctgtat gtcttgatt tctttctaaa ttttggtaa gggagaattt atttgctgt 1620  
 ggggtgggtcg gcatcatctg tgaattgctt atttgagtt ctgggtgtg agaacatggg 1680  
 acactgttat ttttctgtct ctttattat atgttcagag ttcttcataa tataaactta 1740  
 tgacacagct cagttttgg acagctgctg ggtgtgaagt agacccctggc ttgtaccca 1800  
 gcaggcctac gtaactggcc ctccctgggt ggtcttagtt ttctcattt tgaaatgggc 1860  
 ttagacaggg actgtggcca ctagaacctt ttagccttct tctaattcag aggctggat 1920  
 ttggatcagg ggtggctgtg atcaagcacc aaggggccat ttctctgcct cattgtgact 1980  
  
 gcagagcttc ctgtcttgc gggctctgtc cctggcctgt cgggaccacc cagcagctct 2040  
 ggtgaactca gctgccacat tcctgatgtg ctggaggcag agacagggag tctaagttt 2100  
 cgtgggact aagaacgcac agtcatccag ggcctccata gaggtttggg taggaaggt 2160  
 ccaccactgt gaccaaggaa gggcgaaggt cccagtggc aggagggtct gggggagctg 2220  
 agtggcatg gatgcctgac ctgcctgtt ggcctctgtc tgcattcaca cagccctgac 2280  
 ccagcctggc ccagctccaa ctcttgcattt gaatttgaca cggccctcctt cactcctcga 2340  
 gcctgaccct gagctgttag ccattttatc atacaccctt aacatctttt ttcttaatc 2400  
 tcactttatg tttcataaaac tacttccatg acatactagt atcttgcaga atattatggg 2460  
 gcttttagag gtgcagatg gataaatgtg actttacata agctaagctt taccacagga 2520  
 aattattttc cttagtagaga acttttctt gctttactt ggctaacgtg cattgtcaag 2580  
 tctaggaat gcacctgtat gtttcattt ccaaggcttc tcaggacatc ctgggtggcag 2640  
 cacaagtatg gactccccc ctgctaaacg gtcttggat gatatggat tttcaactgt 2700  
 gttcctgtcg agaccatgac attgactcat aggtgtctt caccctact tctgcctcta 2760  
 gcccacatct gggctccccc gagaccctt cacttctctt gatttccctc tccggactgt 2820  
 cctgcatct gatgtggc catggattt cccagtttg caagagctac agccaccac 2880  
 atgcttgcag gacaatatga aactctggat catggattct cctgacacac agagctcacc 2940  
 agagtcactg gtttggca tagggtcagg gatgccatgg cagggacctg gcatctgacc 3000  
 aagagcggac ctatccccctg tcccccggacca gcaactctt agcccagaga ctggagcaga 3060  
 cacagaaggc atgcgagaag tgccgtgtga tgctgggtt gtttctgtt gaaaggcaga 3120  
 atcttaggaga gtgtgacacc cccctggtcc cagccaggcg aggctgggtt ctcaggggta 3180  
 cagtgagagag ctgagggaaagg ggtgtctggg tgaggaaggc cttacctgca gagatgccc 3240  
 gggaaacttag gaaactttca cataggcaac tttccactg gttcagggt tctttccacc 3300  
 acaaatttag aaccctggaa aggcttaggaa ttatatgtga gaaaagaaaa aatgagataa 3360  
 aacaagatt ctgattgaca atgagaatat ttattgaggg ttatttgagt gcagggagaa 3420  
 gggcttgatg ctttgggttgg ggaggagaga cccctccctt gggatctgc agctctagtc 3480  
 tcccgtgggtt ggggggtgagg gttgagaacc tatgaacatt ctgtaggggc cactgtcttc 3540  
 tccacgggtc tcccttcatg cgtgacctgg cagctgttagc ttctgtggta cttccactgc 3600  
 tcagggcgtca ggctcagata gctgtggcc gctacttgt ttttgcctttt tttggagggt 3660  
 gtgggtgtct ccactcccccc cttgacgggg ctgctatctg cttccaggc cactgtcactg 3720  
 gctcccccgggt agaagtact tatgagacac accagtgtgg ctttgggtt ttgaagctcc 3780  
 tcagaggagg gggggaaacag agtggccgg gggcagccct tgggctgacc tgccgggtgg 3840  
 atgagggcga gggggctaga gtcctgggtt ccacctgggg agccctgac ctctgtat 3900  
 gatgaggtgt tgggggtcccc ttgttcaggg gctctgtgtc tgaaggtcta tgccaggcag 3960  
 aggggtcagg gtgttttcca ctatgcctt atctgcacgg ggagctgttt taccttagac 4020  
 acctgaccac ctgtctgttag atctctcggg gccttggccc ccaacaccga catctgaccc 4080  
 tcagcgcctt gaccctgtcc cttctgtcca tcctgacaga taaagagagc tctgtgtctc 4140  
 ccctgcacac gcaactctgg gtttactttt ctggcctggc tcctcagctc tttgggat 4200  
 tggggcctt tgggtccctca ggctgttcca gccaaatgtt ttttgggtt cccgtgtatg 4260  
 gggcaaggggc ctggggggat cggagacccct gcctgtgtc ctgggtcttc tcttattccg 4320  
 tggagtctt tctgcaccc accccacgtc cccgtaccc ggtcatagca gtggggctt 4380  
 cacgcagtggtt actctgcccc tctgatcccc ctggcagacag gggatatgtt ctgaagagac 4440  
 ccaggagccc gcccctccgt cacatccact cttttgtga cccttccctt ggcttctgg 4500  
 tgtccagagt ctgtttcttc cttctccctc ctgacgggggt ttcctgagtc tcaggctggc 4560

tcagggctca gtccctggca gccccagac gcccaggca gcccctccac ctcctaccc 4620  
 attctgggtc tggatcctgg ctctgggtcc cagctctgtg attcccgagc atcagcccc 4680  
 agggcaactgg gtcctctaa agtctcccg gaggtgcctc ctcagaccc cttgttcca 4740  
 attccccagg agatggaacc caggtAACCC aagacaaaag ctgttccgac aagaacccag 4800  
 actgaggagg ccagaacaga acaaggctta gagacccagc ctgcgcctgt cagacagtca 4860  
 gagagacaaa cagagagaca gagagacaaa cagagagaca gacagacaga cagacagacg 4920  
 aggctcagta ggtcattcta tctagtcccc tgcccctgtg gtcagaggta aagtggtgt 4980  
 agtgacctgc tgagggcaagc aagggtctga acagggaggg cagaggtct tgctcaggcc 5040  
 tggatgcag ggagaaaggc tgaccacaag ttgagacaag atacagaaac aaacaaaaac 5100  
 agcagaaatt gtcccagag cggggagga gaggggagga gagactacc taggacggc 5160  
 agcttggtcc ctccggcga aaccacacgg tgaccactgc tgcccgga gttacagtaa 5220  
 tagtcagcct catctccgg ccgcagcggc caagggcgaa ttccggccg ctaaattcaa 5280  
 ttcgccttat agttagtcgt attacaattc actggcgctc gtttacaac gtcgtgactg 5340  
 gaaaaaccct ggcgttaccc aacttaatcg cttgcagca catccccct tcgcccagctg 5400  
 gcgtaatagc gaagaggccc gcaccgatcg ccctcccaa cagttgcga gcctatacaa 5460  
 acgaattcgc ccttagtata ccccagaact ctgcttctga gcccacagc aaggaggaac 5520  
 ctccaggcct ctcttatcat aggaaggaa gtcttctcat gcaaatactac ttcccttatt 5580  
 ctgtgtcgt cgtaggtgg ctctggtag cagtgatgc aaatctgttcc tccattccct 5640  
 aaaacatttg tcctgttct tgtctgagcc ctgagcctga tggccttctc tgtagtaatt 5700  
 ctcagatca gaagaaggc caagtgcatt ttcagattt cccactagaa ggggcctcat 5760  
 agaagcaac agtcaggctc ttcccttgc agcattacta ggggcttggc ctcattagg 5820  
 gcctcagact aaacccaca gtgccccctg gtgcacacag catgaatgcc attttctgca 5880  
 catcaactaga tcactcagaa gggctactta tgagtccata atacatgcc gatgcattag 5940  
 cgagagttt acaagtgtt cctcaagaag actttgtaa tatagaatag gatgatgggg 6000  
 acccttgc ttcaagccca tctttatatt tgagtgaata ttaggaggta aatgttttt 6060  
 cccaagtcct ccagacaata gggagtgag tcaagattcc acccaggaga tgcacccctag 6120  
 agcccgacct tccagccct tcctgcaccc cctccctgcac cctgctccat ctccctccctc 6180  
 tccctcatcc aaggcttttgg gggccctct tggccatcc agagctccca caagaagata 6240  
 gaaaagaatt agtgcaccgaa atggcagaaa cataattttct cacagtctg aagctggaaa 6300  
 acccaagata aagggtgttag tgggtttgtt ttcccttgag gactcttcc ttggcttgc 6360  
 ggttgcattcc tccttgctga atcctcacct ggtctttct ctgcacgctc acctctggg 6420  
 cctcattttct gtgtgtgcaa atttcttctt cctaggagga catcagtccca atttgagaag 6480  
 aatccaccct aatttttca ttttcaactt gtcaccttct taaagaccct atgcacaatt 6540  
 tcagtcacat attgtgtgtt acagcttca tgcatcattt ttggggact taattcagcc 6600  
 aataacccccc caccctctgg actccaaaaa actcatgtct ttctcaactt taaaacacatt 6660  
 caactcatcc caacagcgc agtcctaaac taactcagca cctactctaa gacccaaactc 6720  
 tcatttagat atcaccaaaa tcaagtgtgg gtgattatcc agatgattc atcctgaggg 6780  
 tttaaaggaa aacaatttgg ggggtttctt ctccagtcct ctgttatcat ccagggttcca 6840  
 gaaaagtaaa ctcctacttc aataagattt aaataaaaaaa gtgagtcac atcagcaaca 6900  
 ttttgagtc agatgtgaaa aattcacatc tgtcacttt taaaataatt tagagtataag 6960  
 aataatttta atgccataaaa attgaattt gtgatcagta gccatggct atctctgaca 7020  
 gcatttggaa aagagctata gttgatacag aaaatataac ccaaaaaaca agagttgttt 7080  
 ttagagcaga atatttccaa gttactaag ataaatcgta cacagaaata atataatcca 7140  
 aagaaaaatta atttcttgta ggcataattaa attactaaat ccaatttttag cattgagcat 7200  
 caacattttg gtatgcatat aaagccacct ctcaatggtt atataaaaagg gcagttgttt 7260  
 cctacttcat gttacagttt atttgtgtct taatgggtct ttgatagtca gagagaaggt 7320  
 gctccagaag atgcttcctt tacctaaaag aggaaaaata ttctttaca taaaacgcata 7380  
 atttgcagga taacatattt ccactctcat catccctgtt ctgtcatgg caacttagtt 7440  
 ggaggactta cagttaaaat ctcaaactca gccaggcact gtgatcattg cctgtatcc 7500  
 cagcactttg ggaggcccag acgggtgat catgaggtca ggagattgac accatccctgg 7560  
 tcaacattgt gaaaccatgt ctctacaaaa aataaaaaaa ttgcctggc atgatggcga 7620  
 gagcttggtaa tcccagctac ttgggaggt gaggcaggag aatttcttga accccggggagg 7680  
 tggatgttgc agtgagccgc gattgtgcca ctgcactcca gcctggcaac agagtgagac 7740  
 tccatctcaa aaataaataa ataaataat aaattttaaa aacatctcaa actctcttct 7800  
 ttattccatt gttgcattct gagtttaacg atctacttgc ttataaaaaa ttgcaatac 7860  
 attaaaaagt tcaacttcat ttatcattt ttaatgtgc tcagaacacc aaccatcttgc 7920  
 tgtgtttttg gttcagcttcaaggctgtat tttaagacct ttttctctc agcctacact 7980  
 ggatcactcc cgacttggtg caagcttct tgcccatttg cccctccctc tgcctcta 8040  
 ttttcacctt ccggaaatctt ctattcctga tataactgaaat ctctcacaac acagagcaaa 8100  
 tggatgaaga tggaaatcat gagcttggta cacagggctg tcttgagcag acacaagatc 8160  
 caatcaaaca catggtacag gtaggttctt atccaaagaa agacctcagg cccctagagg 8220

aggtgaatta cagtgcctt cacaaggaga tctccacata gaacatatgc gggtgcaatg 8280  
 ttcaaacttc aaataaccct agaaaccaga gaccgttaaa ccacatcctg tgggacatcc 8340  
 ctggcctgcc accaattttt ttaatggccc cagaactgat agtggtttt atatgtttt 8400  
 atgattacgt tgttagatggt gtatcagaac atacatatta tcccaacgtt gtcttgc 8460  
 tggcaaagac taaaatccctt cttaccgagg cattgaagaa acggtttacc aaatcctaaa 8520  
 acataatgag cactgaaata tttgagtaaa tgctcaacctt caagaaaaat aggagaaaatc 8580  
 aaaaataaat gtgtacaacag ataactttt atatctgata gggtggcaca aacttgcact 8640  
 ttcaccaatg aattccaatc aatattttagg gctggattt taaactggta gaactggagg 8700  
 ggaatatgaa aacaatggat aaaagttaaa aatgcacatc ctggatggcc agcaattcca 8760  
 cttctggaaa tttatccat ggtgatatgc acacatgaac tcaaaggagt ctgcacagg 8820  
 atgcttgctg cagtgtgatt tgtaagatca aaatcatggt gataaccatt agaggctgca 8880  
 tggctaaaat cctactacag aatactctac agcgttagaa tgaatggca gtgctctatg 8940  
 cctatgacgc cccagggaaag aataagaaaat ggtcaggtt tgggatggcc tttgacaagg 9000  
 gggactggga caggtgcctt acacttcaat ctctccctttt cctctgagat ttccacatc 9060  
 agacaaaacag gttagggaca gtggaaagccc ctcaggctgg gcctggccac ctgctctggc 9120  
 ctctgaatgc agcctggctt gacagcttgg ctgcaacttc atgaccaacc cagaaccaga 9180  
 accacaaaac taagctgctc tcaattccag atgcaccgaa gtgacaagat cacaacacg 9240  
 tggctctta ccatgtaaa tattagggag caatttttat gcaacaatag acaataaata 9300  
 caatttgggtt tttgaaatat attttcttggt ggatatttca ggtacacaac atgttgat 9360  
 agtctaaaca cataataaaa tggttactttt gtttttaata aaacctattt aatcaaagg 9420  
 tatgaagcct aaatttatata taataatggc tatgtctacc aattgactca taaaatttaa 9480  
 atattggatg caactaatgt ctgaatattt attaaattca ttctcacctt tagtagatta 9540  
 agaaaagattt cagctacaaa agtattgaca cccatggaaa ttacaatgc tggatgtcaa 9600  
 tgaggaagaa ggaatggact cacgttaact cttccctgtt gggccattttt gggaaactccc 9660

aacctatagg gacaccatcc acttttgggg agtttccagg acagggcccc agcgaattga 9720  
 gacgggagga ttttgagggg gcactgagcc tgcacgca aaggcgaaat tcgcggccgc 9780  
 taaattcaat tcgcccata gtgagtcgta ttacaattca ctggccgtcg ttttacaacg 9840  
 tcgtgactgg gaaaaccctg ggttaccctt acttaatgc cttgcagcac atccccctt 9900  
 cggcagctgg cgtaatagcg aagaggcccc caccgatgc cttcccaac agttgcgcag 9960  
 cctatacgta cggcagtttta aggtttacac ctataaaaaga gagagccgtt atcgtctgtt 10020  
 tggatgtta cagagtata ttattgacac gcccggcga cggatgtga tccccctggc 10080  
 cagtgcacgt ctgctgtcag ataaagtctc cgtgaactt taccctgtgg tgcataatcgg 10140  
 ggtgaaagc tggcgcata tgaccaccga tatggccagt gtgcccgtt ccgttatcgg 10200  
 ggaagaagtg gctgatctca gccaccgcga aaatgacatc aaaaacgcca ttaacctgtat 10260  
 gttctggggaa atataaatgt caggcatgag attatcaaaa agatcttca cctagatcct 10320  
 tttcacgtag aaagccatgc cgcagaaacg gtgtcgtaccc cggatgaatg tcaagctactg 10380  
 ggctatctgg acaaggggaaa acgcaagcgc aaagagaaaag caggtagctt gcagtgggt 10440  
 tacatggcga tagctagact gggcggtttt atggacagca agcgaaccgg aattgccagc 10500  
 tggggcgccc tctggtaagg ttgggaagcc ctgcaaaatg aactggatgg ctttctcgcc 10560  
 gccaaggatc tgatggcgcga ggggatcaag ctctgatcaa gagacaggat gaggatcggt 10620  
 tcgcacatgattt gaacaagatg gattgcacgc aggttctccg gccgcttggg tggagaggct 10680  
 attcggttat gactgggcac aacagacaat cggctgtctt gatgcccccg ttttccggct 10740  
 gtcagcgcag gggcgccccgg ttctttttgtt caagaccgac ctgtccgtg ccctgaatga 10800  
 actgcaagac gaggcagcgc ggctatcggt gctggccacg acgggcgttc ctgcgcagc 10860  
 tggctcgac gttgtcaactg aagcgggaaag ggactggctg ctattggcg aagtgcggg 10920  
 gcaggatctc ctgtcatctc accttgcctt tgccgagaaa gtatccatca tggctgtatgc 10980  
 aatgcggcgg ctgcataatgc ttgatccggc tacctgccc ttcgaccacc aagcgaaaca 11040  
 tcgcacatcgat cggcgttcaatg ttttccatggc ttttccatggc ttttccatggc 11100  
 cgaagagcat caggggctcg cgccagccga actgttgcgc aggtcaagg cgagcatgcc 11160  
 cgacggcggat gatctcgatcg tgaccatgg cgtgcctgc ttgcccata tcatggtgg 11220  
 aatggccgc ttttctggat tcatcgactg tggccggctg ggtgtggcgg accgctatca 11280  
 ggacatagcg ttggctaccc gtgatattgc tgaagagctt ggcggcgaat gggctgaccg 11340  
 ctgcacatcgat ttttccatggc ttttccatggc ttttccatggc ttttccatggc 11400  
 ttttccatggc ttttccatggc ttttccatggc ttttccatggc ttttccatggc 11460  
 ttttccatggc ttttccatggc ttttccatggc ttttccatggc ttttccatggc 11520  
 ggaacccctt ttttccatggc ttttccatggc ttttccatggc ttttccatggc 11580  
 taaccctgat aaatgctca ataatattga aaaaggaaga gtatgagttat tcaacat 11640  
 cgtgtcgccc ttatccctt ttttccatggc ttttccatggc ttttccatggc 11700  
 acgctggtga aagtaaaaaga tgctgaagat cagttgggtg caggtgggg 11760  
 ctggatctca acagcggtaa gatccctgtt agtttgcgc cggaaacg ttttccatggc 11820

atgagcactt ttaaaagtct gctatgtggc gcggatttat cccgtattga cgccgggcaa 11880  
gagcaactcg gtgcggcat acactattct cagaatgact tggtagtgc ctcaccagtc 11940  
acagaaaaggc atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc 12000  
atgagtgata acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta 12060  
accgctttt tgcacaacat gggggatcat gtaactcgcc ttgatcggtt ggaaccggag 12120  
ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgttagc aatggcaaca 12180  
acgttgcgc aactattaac tggcgaacta cttactctag cttcccccga acaattaata 12240  
gactggatgg aggcggataa agttgcagga ccacattctgc gctcggccct tccggctggc 12300  
tggttattt ctgataaaatc tggagccgtt gagcgtgggt ctcgcggat cattgcagca 12360  
ctggggccag atggttaagcc ctcccgatc gtagttatct acacgacggg gagtcaggca 12420  
actatggatg aacgaaatag acagatcgct gagataggtg cctcactgtat taagcattgg 12480  
taactgtca accaagttt ctcataatata ctttagattt attaaaaact tcatttttaa 12540  
tttaaaagga tcttaggtaa gatcctttt gataatctca tgacaaaaat cccttaacgt 12600  
gagttttcg tccactgagc gtcagacccc gtagaaaaaga tcaaaggatc ttcttgagat 12660  
ccttttttc tgcgcgtaat ctgctgctt caaacaaaaa aaccaccgct accagcggtg 12720  
gtttgtttgc cggatcaaga gctaccaact cttttccga agttaactgg cttcagcaga 12780  
gcmcagatac caaatactgt ccttctagtg tagccgtagt taggccacca cttcaagaac 12840  
tctgttagcac cgcc tacata cctcgctctg ctaatctgt taccagtggc tgctgcca 12900  
ggcgataagt cgtgtttac cgggttggac tcaagacgt agttaccggc taaggcgcag 12960  
cggtcgccgtt gaacggggggg ttctgcaca cagccagct tggagcgaac gacctacacc 13020  
gaactgagat acctacagcg tgagctatga gaaagcgcca cgctcccgaa agggagaaaag 13080  
gccccacaggt atccggtaag cggcagggtc ggaacaggag agcgcacggg ggagcttcca 13140  
gggggaaacg cctggtatct ttatagttct gtcgggtttc gccacccctg acttgagcgt 13200  
cgattttgt gatgtcgctc agggggggcg agcttatggaa aaaacgcacaa cAACGCGGCC 13260  
tttttacggt tcctgggctt ttgctggct tttgctcaca ttttcttcc tgcgttatcc 13320  
cctgattctg tggataaccg tattaccggc tttgagtgag ctgataaccgc tcgcgcagc 13380  
cgaacgaccg agcgcagcga gtcagtggc gaggaagcgg aagagcgc aatacgcaaa 13440  
ccgcctctcc ccgcgcgtt gccgattcat taatgcagct ggcacgcacag gtttcccgac 13500  
tgaaaaggcg gcagtggcgc caacgcaatt aatgtgagtt agctcactca ttggcaccc 13560  
caggctttac actttatgct tccggctcgat atttgtgtg gaattgtgag cggataacaa 13620  
tttcacacag gaaacagcta tgaccatgat tacgccaago tcagaattaa ccctcactaa 13680  
aggaa 13685